

SUPPLEMENTAL AGREEMENT
BETWEEN
UNIVERSITY OF HOUSTON
AND
THE U. S. NUCLEAR REGULATORY COMMISSION

THIS SUPPLEMENTAL AGREEMENT, effective the 1st day of October, 1978, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), as represented by the UNITED STATES NUCLEAR REGULATORY COMMISSION (hereinafter referred to as the "Commission"), and THE UNIVERSITY OF HOUSTON (hereinafter referred to as the "Contractor"),

WITNESSETH THAT:

WHEREAS, the parties desire to modify Contract No. NRC-04-75-194 as hereinafter provided, and this supplemental agreement is authorized by law, including the Energy Reorganization Act of 1974, as amended, and the Atomic Energy Act of 1954, as amended.

NOW, THEREFORE, said contract is hereby modified as follows:

1. Appendix A, attached to this supplemental agreement and made a part hereof, provides for the research to be performed by the Contractor during the contract period specified therein.
2. In Article II - The Period of Performance, the date "September 30, 1979" is substituted for the date "September 30, 1978".
3. In Article III - Consideration, the sum "\$ 241,835.00" is substituted for the sum "\$177,850.00".

IN WITNESS WHEREOF, the parties have executed this document.

UNITED STATES OF AMERICA

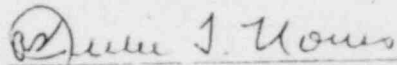
BY:


Kellogg V. Morton, Chief
Research Contracts Branch
(title)

Nuclear Regulatory Commission

UNIVERSITY OF HOUSTON

BY:


Julie T. Norris, Ass't. Vice
Chancellor & Director, Res. Admin.
(title)


I, James Bishop, certify that I am the
(attester)

Controller of the Contractor named
(title)

under this document; that Julie T. Norris
(signatory)

who signed this document on behalf of said Contractor was then
Ass't. Vice Chancellor & Dir., Res. Admin. of said Contractor; that
this document was duly signed for and on behalf of said Contractor by
authority of its governing body and is within the scope of its legal
powers.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of
said Contractor.


James Bishop

(SEAL)

CONTRACTOR: UNIVERSITY OF HOUSTON

APPENDIX A

For the Contract period October 1, 1978 through September 30, 1979

Article A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

- (a) The scope of work under this contract is unclassified and shall be in accordance with Contractor's proposal entitled, "Studies in two-phase Flow Gas-Liquid Interactions in an Upflow System" which is incorporated by reference including the following tasks:

Task 1. Flow Reversals (Flooding)

- a) Execute experiments to establish operating conditions leading to the three mechanisms of flooding identified in FY 1978.
- b) Test the alternative flooding models developed in FY 1978.

Task 2. Upflow Film Structure and Interface Interactions.

- a) Carry out experiments to measure the cross correlations between pressure and wave height.
- b) Relate interfacial drag to the structure of the interface.
- c) Develop a model for predicting the drag force at the air-water interface.

Task 3. Droplet motion and size

- a) Execute experiments to obtain data on the statistics of droplet size and velocities (radial and axial).
- (b) The Principal Investigator expects to devote the following approximate amount(s) of time to the contract work:
- 100% of his time during the one month summer year.

ARTICLE A-II WAYS AND MEANS OF PERFORMANCE

(a) Items for which support will be provided as indicated in A-III, below

(1) Salaries and Wages \$ 24,500.00

(2) Equipment to be purchased or
fabricated by the Contractor \$ 12,800.00

(3) Travel \$ 1,500.00
 (i) Domestic

 (ii) Foreign \$ -0-

(4) Other direct costs

(5) Indirect costs based on a predetermined rate of 57 percent applicable
to salaries and wages and 11.1% of salaries and wages applicable to
fringe benefits.

(b) Items, if any, significant to the performance of this contract, but
excluded from computation of Support Cost and from consideration in
proportioning costs:

NONE

(c) Time or effort of Principal Investigator(s) including indirect costs
and fringe benefits contributed by Contractor but excluded from com-
putation of Support Cost and from consideration in proportioning
costs:

NONE

Article A-III

The total estimated cost of items under A-II(a) above for the contract period stated in this Appendix A is \$63,985.00 ; the Commission will pay 100 percent of the actual costs of these items incurred during the contract period stated in this Appendix A, subject to the provisions of Article III and Article B-XXVIII. The estimated NRC Support Cost for the contract period stated in this Appendix A is \$63,985.00 .

The estimated NRC Support Cost is funded as follows:

- | | |
|---|---------------------|
| (a) Estimated unexpended balance from prior period(s) | \$ <u>-0-</u> |
| (b) New funds for the current period | \$ <u>63,985.00</u> |
| (c) The new funds being added in A-III(b) constitute the basis for advance payments provided under Article B-X. | |